

## ABSTRACT OF THE DISCLOSURE

A micro-pump having a first layer, a second layer and an intermediate flexible layer is disclosed. The first layer and second layer may be of moldable plastics. The  
5 intermediate layer may be a substantially flat PDMS membrane layer having an inlet hole and an outlet hole. The first layer and the second layer are disposed on either side of the intermediate layer to define a pumping chamber that encloses an actuatable portion of the intermediate layer and valve seats that abut the inlet hole and the outlet hole of the intermediate layer. The actuatable portion is moveable to  
10 increase and reduce the volume of the pumping chamber to allow pressure to lift the respective intermediate layer portions surrounding the inlet hole and the outlet hole to thereby draw fluid and expel fluid from the pumping chamber respectively.